

REMARKS

Claims 1-3, 5-15 and 18-32 are pending in this application. The presently pending claims include independent method claims 1, 6, and 11, and independent data structure claims 18 and 25. New claims 18-32 are added by this Response. These claims are directed to a data structure and a computer memory medium and electronic data stream having this structure.

Minor clarifying revisions have been made to the claims of the present application. However, these clarifying revisions have not materially affected claim scope.

The Rejection

The Examiner has rejected claims 1-15 of the present application as being allegedly fully anticipated by the Rioux patent. This rejection is respectfully traversed for the following reasons.

All of the claims of the present application are directed to the representation of an object by some form of representation of a two dimensional image of the object. In the case of claim 1, the object is represented by a view descriptor of a first outline of the object and at least one additional view descriptor of the outline of the object in a different view. These view descriptors are associated to form an object descriptor containing said view descriptors. Thus, claim 1 requires the generation of an object descriptor from at least two view descriptors defining outlines of the object of different views.

The Rioux reference principally relied on by the Examiner does not disclose such a structure. In the Rioux reference, a 3-dimensional object is described by a 3-dimensional object model. See, col. 5, ll. 37-62. The object model is defined in a known format described at column 6, lines 41-55. Each of the contemplated object models is a 3-dimensional object model of a type which is generally well known. In contrast to the assertion made by the Examiner, the Rioux reference does not characterize an object using a view descriptor of a first outline and at least one additional view descriptor of an outline of the object in a different view as recited by claim 1.

The Examiner refers to column 5, lines 44-48, to support the position that the object models include view descriptors of the outline of the object in different views. The object model in Rioux is formed by scanning or imaging the object, using a transducer. However, while the object model of each object in the database of Rioux is formed from images of the object; as is explained at column 6, lines 42-55, the representation of the object is in the form of a 3-dimensional object model, and not plural 2-dimensional outlines. The importance of this distinction, recited in independent claim 1, may be apparent from a review of the textbook *Introduction to MPEG 7 - Multimedia Content Description Interface*, edited by Manjunath et al. and published by John Wiley & Sons, 2002. Chapter 15 of this text, authored in part by the inventor of the present application, discusses various shape descriptors including contour-based shape descriptors and 3-dimensional shape descriptors. Three-dimensional shape descriptors are described at Section 15.6 of this text while contour-based shape descriptors are described at Section 15.5.

It is apparent from this description in the text that the type of shape descriptor described in the Rioux patent is a 3-D shape descriptor and not a contour-based descriptor, which is a view descriptor of the outline of the object as recited by the claim. Thus, as is apparent from this textbook, the art generally recognizes that a view descriptor of the outline of the object is materially different from a 3-dimensional object model such as that recited in the Rioux reference.

Independent claim 11 is directed to a method of representing an object comprising deriving representations of a plurality of different 2-dimensional views corresponding to the object and supplying said plurality of different 2-dimensional views as at least part of a representation of the object. Once again, for the reasons already discussed, the 3-dimensional object models stored in the Rioux reference cannot be considered a plurality of different 2-dimensional views of the object. Consequently, the Rioux reference cannot teach or suggest the limitations of this claim.

For the reasons set forth above with respect to independent claim 1 and 11, all of the rejected claims recite features not shown or suggested by the reference cited by the Examiner. Consequently, the Examiner is respectfully requested to reconsider and withdraw the outstanding rejection as it applies to these claims.

The New Claims

Newly presented claims 18-32 have been added by this Response. These claims also distinguish over the Rioux reference due to the representation of an object using representations of 2-dimensional views of the object. Consequently, these claims

patentably distinguish over the art of record for reasons analogous to those already set forth.

For all of the above-stated reasons, reconsideration and withdrawal of the outstanding rejections and allowance of all the claims are earnestly solicited.

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a two-month extension of time for filing a reply in connection with the present application, and the required fee of \$390.00 is attached hereto.

If necessary, the Commissioner of hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under § 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment: Version with Markings to Show Changes Made

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

Pages 1-3

Subheadings have been added.

IN THE CLAIMS:

Claim 4 has been cancelled.

The claims have been amended as follows:

1. (Amended) A method of representing an object appearing in a still or video image, wherein the object appears in the image with a first two-dimensional outline, by processing signals corresponding to the image, the method comprising:

deriving a view descriptor of the first outline of the object, [and]

deriving at least one additional view descriptor of the outline of the object in a different view, and

associating the two or more view descriptors to form an object descriptor
containing the view descriptors.

6. (Amended) A method of searching for an object in still or video images by processing signals corresponding to image, the method comprising:

deriving a view descriptor of the first outline of the object,

deriving at least one additional view descriptor of the outline of the object in a different view,

associating the two or more view descriptors to form at least one stored object descriptor containing the view descriptors.

inputting a query to the computer in the form of at least one two-dimensional outline of [an] the object;[,]

deriving a descriptor of the query object[.];

comparing said query descriptor with [stored] said object descriptor [descriptors for objects in images derived in accordance with a method as claimed in claim 1]; and

selecting and displaying at least one result corresponding to an image containing an object for which the comparison between the respective descriptor and the query descriptor indicates a degree of similarity between the query and said object.

7. (Amended) A method as claimed in claim 6 [dependent on claim 1 or claim 2] wherein a query is input in the form of two or more two-dimensional outlines of an object, and wherein a query view descriptor is derived for each said outline, and wherein the step of comparing comprises comparing each said query view descriptor with each view descriptor in each stored object descriptor to derive a plurality of view-similarity values.

9. (Amended) A method as claimed in [any one of claims 6 to 8] claim 6, wherein at least some of the object descriptors include view-independent descriptors derived in accordance with a method as claimed in claim 3 and wherein the method comprises

inputting a view-independent query value and the step of comparing compares the query value with the view-independent descriptors for the stored object descriptors.

10. (Amended) A method as claimed in [any one of claims 6 to 9] claim 6, wherein the query descriptor is derived using a curvature scale space representation of the query object outline.

11. (Amended) A method of representing an object appearing in an image by processing signals corresponding to said image, the method comprising deriving representations of a plurality of different 2-dimensional views corresponding to the object[.]; and

supplying said plurality of different 2-dimensional views as at least a part of a representation of the object.

12. (Amended) An apparatus adapted for implementing a method as claimed in [any one of claims 1 to 11] claim 1.

13. (Amended) A computer program for implementing a method as claimed in [any one of claims 1 to 11] claim 1.

14. (Amended) A computer system programmed to operate according to a method as claimed in [any one of claims 1 to 11] claim 1.

15. (Amended) A computer-readable storage medium storing computer-executable process steps for implementing a method as claimed in [any one of claims 1 to 11] claim 1.

Claims 18-32 have been added.